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A revision of *Neosclerus* CAMERON VI. Three new species from India, Thailand, and Vietnam (Coleoptera: Staphylinidae: Paederinae)

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A b s t r a c t : Three species of *Neosclerus* CAMERON, 1924 are described and illustrated: *N. anguliceps* nov.sp. (South India), a species of uncertain affiliations, *N. concavus* nov.sp. (Thailand) of the *N. brevispinosus* group, and *N. vietnamensis* nov.sp. (Vietnam) of the *N. brevispinosus* group. The latter species represents the second record of the genus from Vietnam. Including the new species, the genus now includes 47 species distributed in the southern East Palaearctic and Oriental regions.

K e y w o r d s : Coleoptera, Staphylinidae, Paederinae, Medonina, *Neosclerus*, Palaearctic region, Oriental region, India, Thailand, Vietnam, taxonomy, new species.

Introduction

Neosclerus CAMERON, 1924 is distributed in the southern East Palaearctic and Oriental region. The medonine genus previously included 44 described species in five species groups. The regions with the greatest diversity are Thailand (eleven described species; five of them exclusive), China (ten; six exclusive), Taiwan (nine endemic), and India (nine; five exclusive), followed by Myanmar (five; one exclusive), Nepal and Laos (each with four species; none exclusive), Sri Lanka (three endemic), Malaysia (three; one exclusive), Indonesia (two; one exclusive), Vietnam (one endemic), and Bhutan and Honkong (each with one species; none exclusive) (ASSING 2011a, 2011b, 2013, 2014, 2015). An updated key, a catalogue, a map illustrating the genus as whole, and numerous maps showing individual distributions were provided by ASSING (2015).

Material studied since the latest contribution to the genus included three undescribed species, the second species from South India and Vietnam, as well as the twelfth representative of the genus to be recorded from Thailand.

Material, methods, and measurements

The material treated in this study is deposited in the following collections:

NHMW Naturhistorisches Museum Wien (H. Schillhammer)

cAss..... author's private collection

cWun..... private collection Paul Wunderle, Mönchengladbach

The morphological studies were conducted using a Stemi SV 11 microscope (Zeiss Ger-

many) and a Jenalab compound microscope (Carl Zeiss Jena). The images were created using a photographing device constructed by Arved Lompe (Nienburg) and CombineZ software, as well as a digital camera (Nikon Coolpix 995).

Body length was measured from the anterior margin of the mandibles (in resting position) to the abdominal apex, the length of the forebody from the anterior margin of the mandibles to the posterior margin of the elytra, head length from the anterior margin of the frons to the posterior constriction of the head, elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra (at the suture), and the length of the aedeagus from the apex of the ventral process to the base of the aedeagal capsule. The "parameral" side (i.e., the side where the sperm duct enters) is referred to as the ventral, the opposite side as the dorsal aspect.

Descriptions

Neosclerus anguliceps nov.sp. (Figs 1-9)

Type material: Holotype ♂: "India: Kerala, Thiruvananthapuram distr., 0.6 km NE Kallar, rocky stream confluent to Kallar river, above huge rocks and pools / 08°42'50"N, 77°07'51"E, 190 m, 16.X.2016, leg. Gyurm; branches, rotting leaves on rough sand + gravel between stones, flotation / Holotypus ♂ *Neosclerus anguliceps* sp.n. det. V. Assing 2017" (NHMW). Paratype ♂: India: Kerala, Thiruvananthapuram distr., 0.5 km N Kallar, stream confluent to Kallar river, shaded valley above small dam / 08°42'51"N, 77°07'50"E, 170 m, 13.X.2016, leg. Gyurm; wet, rotten leaves between stones on bank, flotation" (cAss).

Etymology: The specific epithet is a noun in apposition and alludes to the pronounced posterior angles of the head.

Description: Body length 4.0-4.2 mm; length of forebody 2.2-2.4 mm. Coloration: body black; legs yellow; antennae pale-reddish.

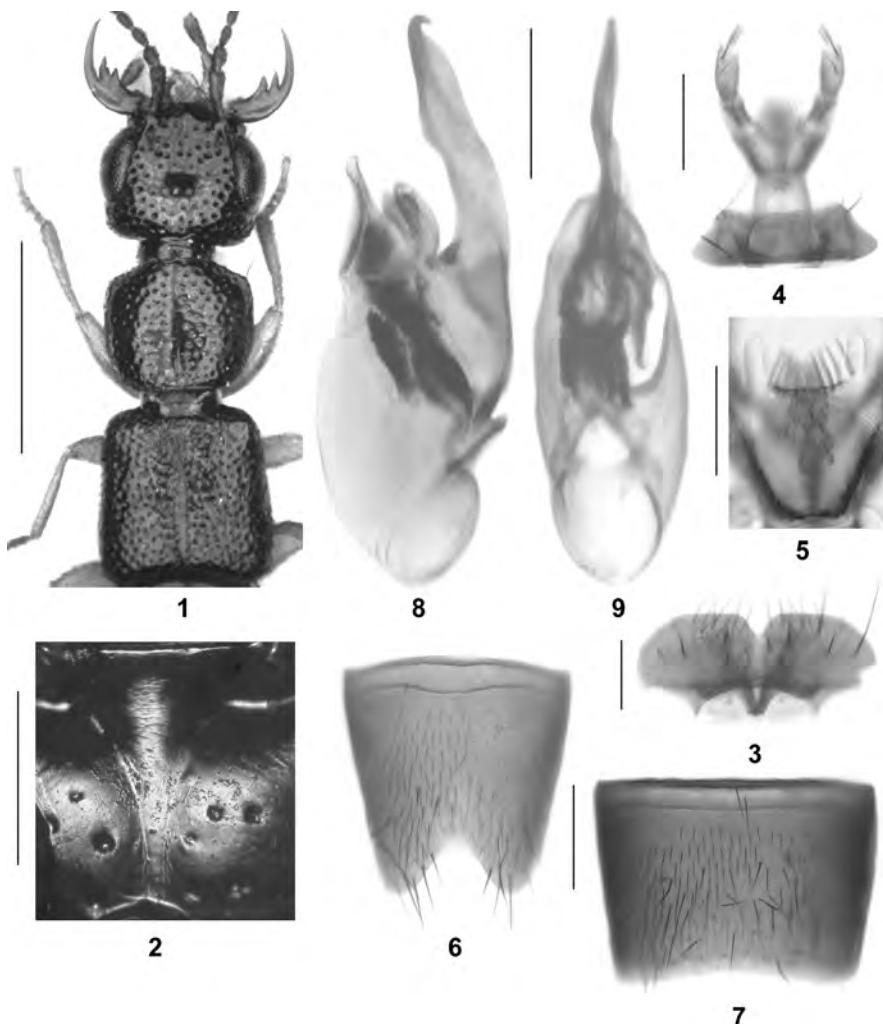
Head (Fig. 1) 1.21-1.23 times as broad as long, with distinct temples and posterior angles (dorsal view); punctuation of dorsal surface coarse, non-umbilicate, and rather dense, less dense in median dorsal portion; interstices without microreticulation; ventral surface with sparse punctuation; gular sutures weakly pronounced, fused with ventral integument (Fig. 2). Eyes large and bulging, but far from reaching posterior angles. Both mandibles (Fig. 1) with two molar teeth. Labrum, labium, and ligula as in Figs 3-5.

Pronotum (Fig. 1) distinctly transverse, 1.12-1.13 times as broad as long and 0.88-0.90 times as broad as head; punctuation similar to that of frons; interstices without microsculpture and glossy; midline narrowly impunctate, posteriorly finely sulcate.

Elytra (Fig. 1) approximately as long as pronotum; punctuation dense, somewhat less coarse than that of pronotum. Hind wings probably present. Metatarsomere I short, approximately as long as metatarsomere II or slightly longer.

Abdomen slightly narrower than elytra; punctuation fine, denser on anterior than on posterior tergites; interstices with shallow microreticulation; posterior margin of tergite VII with palisade fringe.

♂: sternite VII (Fig. 7) moderately transverse, with weakly concave posterior margin, pubescence unmodified; sternite VIII (Fig. 6) approximately as long as broad, posterior excision broad and approximately one-fifth as deep as length of sternite, pubescence unmodified; aedeagus (Figs 8-9) approximately 0.75 mm long; ventral process of highly



Figs 1-9: *Neosclerus anguliceps* nov.sp.: (1) forebody; (2) antero-median portion of ventral aspect of head; (3) labrum; (4) labium; (5) ligula; (6) male sternite VIII; (3) postero-median portion of male sternite VIII; (7) male sternite VII; (8-9) aedeagus in lateral and in ventral view. Scale bars: 1: 1.0 mm; 2, 4, 6-9: 0.2 mm; 3, 5: 0.1 mm.

distinctive shape: long, slender, apically hooked; internal sac with pairs of large dark structures.

C o m p a r a t i v e n o t e s : *Neosclerus anguliceps* is readily distinguished from all its described congeners by the shape of the head and by the distinctive shape of the ventral process of the aedeagus. In addition, it is characterized by relatively large size and a distinctly transverse pronotum. Its affiliations to any of the previously proposed species groups are unclear. Based on the presence of distinct temples, the posteriorly angled head, and the unmodified pubescence of the male sternite VIII it would best fit into the *N.*

fortepunctatus group, which also includes the sole previously described representative of the genus in South India, *N. revolutus* ASSING, 2015. From this species, *N. anguliceps* is distinguished by larger body size, a much more robust and broader habitus, completely different head shape, uniformly black coloration of the body, relatively shorter elytra, dense and coarse punctuation in the posterior portion of the head, much denser punctuation of the pronotum, less dense punctuation of the elytra, and by the male primary and secondary sexual characters.

For illustrations of previously described *Neosclerus* species see ASSING (2011a, b, 2013, 2014, 2015).

D i s t r i b u t i o n a n d b i o n o m i c s : The type locality is situated in Kerala province, Southwest India. The specimens were floated from leaf litter on stream banks at altitudes of 170 and 190 m.

***Neosclerus concavus* nov.sp. (Figs 10-17)**

T y p e m a t e r i a l : Holotype ♂: "THAILAND [43] - Doi Pha Hom Pok, Tad Luang waterf., 19°52'N, 99°07'E, 1100 m, 27.I.29014, leg. Ob / Holotypus ♂ *Neosclerus concavus* sp.n. det. V. Assing 2015" (cAss). Paratype ♀: same data as holotype (cAss).

E t y m o l o g y : The specific epithet (Latin, adjective: concave, excavate) alludes to the pronounced posterior excision of the male sternite VII.

D e s c r i p t i o n : Body length 3.2-3.5 mm; length of forebody 1.8-2.0 mm. Coloration: head and pronotum blackish-brown to blackish; elytra pale-brown; abdomen brown to dark-brown; legs and antennae yellowish.

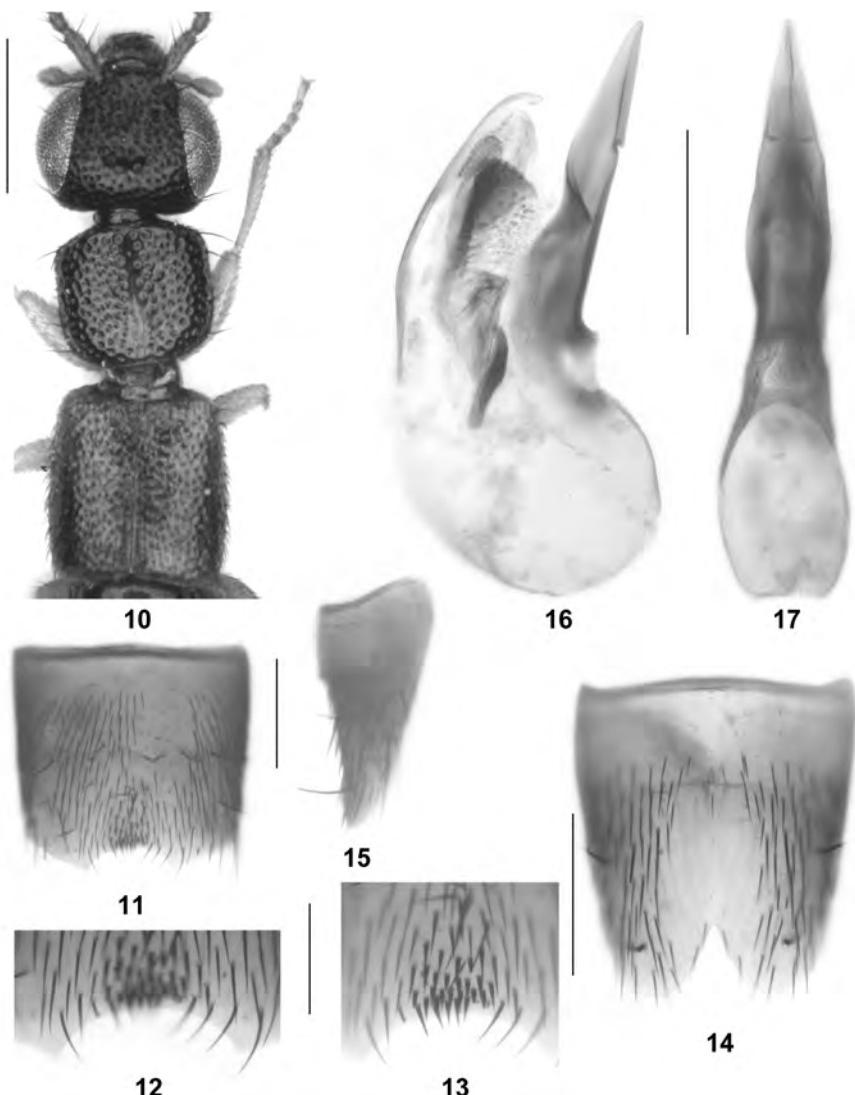
Head (Fig. 10) 1.31-1.33 times as broad as long; punctuation of dorsal surface coarse, umbilicate, and very dense, only slightly less dense posteriorly; interstices in median and anterior dorsal portion without, near posterior constriction with shallow microreticulation. Eyes very large and bulging, separated from posterior margin of head by less than the width of antennomere II.

Pronotum (Fig. 10) approximately 1.05 times as broad as long and 0.82-0.86 times as broad as head; punctuation similar to that of median portion of head, but less dense and not umbilicate; interstices without microsculpture and glossy; midline narrowly impunctate and with fine sulcus of variable length.

Elytra (Fig. 10) 1.06-1.09 times as long as pronotum; punctuation dense, distinctly finer than that of pronotum. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of metatarsomeres II and III.

Abdomen narrower than elytra; punctuation fine and moderately dense; interstices with shallow microreticulation; posterior margin of tergite VII with palisade fringe.

♂: sternite VII (Figs 11-13) moderately transverse, posteriorly with a distinct dense cluster of modified short and stout black setae, posterior margin with a pronounced median excision of nearly semi-circular shape; sternite VIII (Figs 14-15) weakly oblong, extensively without pubescence in median and postero-median portions, with few setae in antero-median portion and at the margins of the posterior excision, and with dense setae laterally, posterior excision V-shaped, its depth approximately one-fifth the length of sternite; aedeagus (Figs 16-17) 0.58 mm long; ventral process straight, apically acute, and subapically with a pair of small teeth and a pair of indentures.



Figs 10-17: *Neosclerus concavus* nov.sp.: (10) forebody; (11) male sternite VII; (12-13) postero-median portion of male sternite VII; (14) male sternite VIII in ventral view; (15) male sternite VIII in lateral view; (16-17) aedeagus in lateral and in ventral view. Scale bars: 10: 0.5 mm; 11, 14-17: 0.2 mm; 12-13: 0.1 mm.

C o m p a r a t i v e n o t e s : Based on the male primary and secondary sexual characters, *N. concavus* belongs to the *N. brevipennis* group. Among the species of this group, it is characterized particularly by the pronounced posterior excision and the defined posterior cluster of dense modified setae of the male sternite VII, by the chaetotaxy of the male sternite VIII, and by the shapes of the ventral process and the internal structures of the aedeagus.

For illustrations of the male sexual characters of other species of the *N. brevipennis* group see ASSING (2011, 2013, 2015).

D i s t r i b u t i o n a n d b i o n o m i c s : The type locality is situated in the extreme north of Thailand, close to the border with Myanmar. The specimens were sifted from leaf litter near a stream at an altitude of 1100 m.

***Neosclerus vietnamensis* nov.sp. (Figs 18-23)**

T y p e m a t e r i a l : Holotype ♂: "N-Vietnam - 6 km NW Sa Pa, 22°21'39"N, 103°47'19"E, 1810 m, pasture margin, 7.VIII.2013, V. Assing [8+2] / Holotypus ♂ *Neosclerus vietnamensis* sp.n. det. V. Assing 2015" (cAss). Paratypes: 2♀ ♀: same data as holotype, but leg. Wunderle (cWun, cAss).

E t y m o l o g y : The specific epithet is an adjective derived from Vietnam.

D e s c r i p t i o n : Body length 3.0-3.5 mm; length of forebody 1.7-1.9 mm. Coloration: body black; legs and antennae dark-brown.

Head (Fig. 18) moderately transverse, approximately 1.2 times as broad as long; punctation of dorsal surface coarse, non-umbilicate, moderately dense in anterior and median portions, and rather sparse posteriorly; interstices without microreticulation. Eyes very large and bulging, separated from posterior margin of head by less than the width of antennomere II.

Pronotum (Fig. 18) approximately as broad as long and 0.9 times as broad as head; punctation similar to that of median portion of head; interstices without microsculpture and glossy; midline narrowly impunctate and with fine furrow of variable length posteriorly.

Elytra (Fig. 18) 0.91-0.94 times as long as pronotum; punctuation dense, fine, and weakly defined. Hind wings present, but possibly of reduced length. Metatarsomere I nearly as long as the combined length of metatarsomeres II and III.

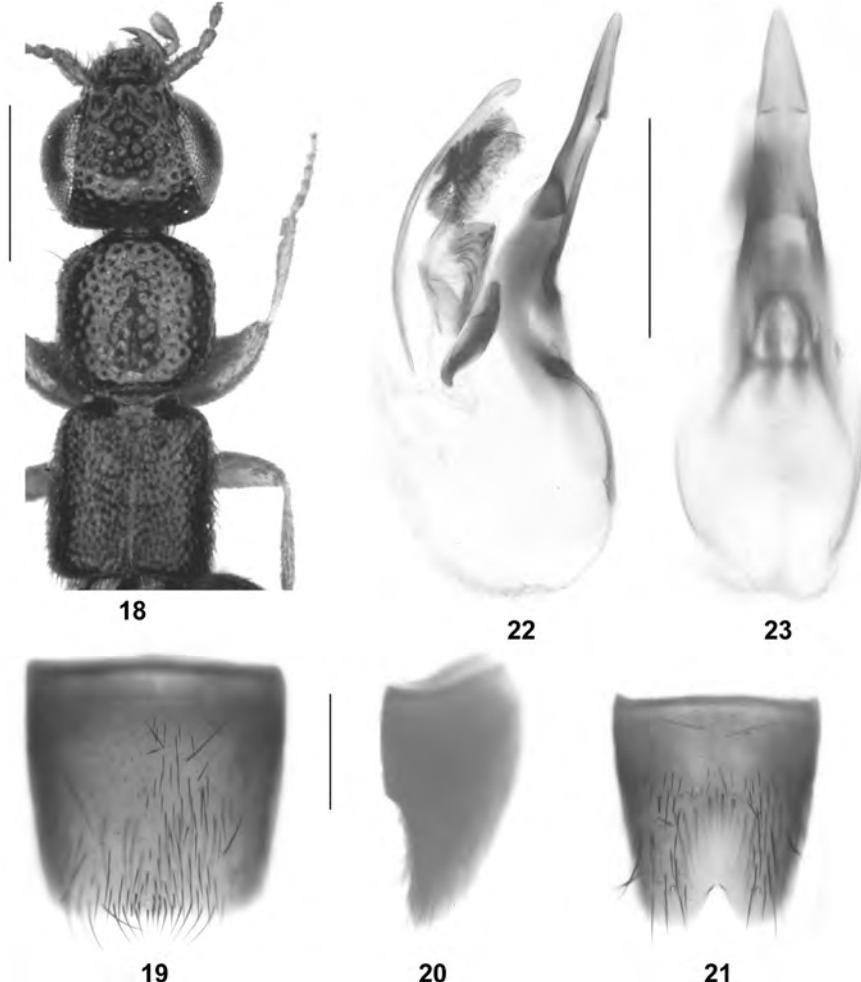
Abdomen approximately as broad as elytra; punctuation fine and dense; interstices with shallow microreticulation; posterior margin of tergite VII with palisade fringe.

♂: sternite VII (Fig. 19) weakly transverse, 1.1 times as broad as long, posterior margin broadly and very indistinctly concave (nearly truncate) in the middle, in postero-median portion with slightly stouter black setae; sternite VIII (Figs 20-21) very weakly oblong, extensively without pubescence in median and postero-median portions, without setae at margins of posterior excision, and with few setae in antero-median portion, posterior excision V-shaped, its depth approximately one-seventh the length of sternite; aedeagus (Figs 22-23) 0.55 mm long; ventral process straight, apically acute, and subapically with a pair of small teeth.

C o m p a r a t i v e n o t e s : Based on the male primary and secondary sexual characters, *N. vietnamensis* belongs to the *N. brevipennis* group. The male sexual characters are highly similar to those of *N. biangulatus* ASSING, 2015 (Thailand), from which *N. vietnamensis* differs by distinctly shorter elytra (*N. biangulatus*: elytra approximately 1.1 times as long as pronotum) with distinctly denser punctation, paler coloration of the legs (*N. biangulatus*: legs dark-yellowish), the shape of the posterior margin of the male sternite VII, and a slightly more slender ventral process of the aedeagus. Even though the differences in the male sexual characters are not pronounced, *N. vietnamensis* is hypothesized to represent a distinct species, not only because the differences in external characters (especially the shape and punctation of the elytra) are conspicuous and apparently

constant, but also because interspecific variation in the male sexual characters is generally low in the *N. brevipennis* group.

For illustrations of the external and male sexual characters of other species of the *N. brevipennis* group see ASSING (2011, 2013, 2015).



Figs 18-23: *Neosclerus vietnamensis* nov.sp.: (18) forebody; (19) male sternite VII; (20-21) male sternite VIII in lateral and in ventral view; (22-23) aedeagus in lateral and in ventral view. Scale bars: 18: 0.5 mm; 19-23: 0.2 mm.



Fig. 24: Type locality of *Neosclerus vietnamensis* nov.sp.

Distribution and bionomics: *Neosclerus vietnamensis* represents the second record of the genus from Vietnam. The type locality is situated near a pass to the northwest of Sapa, North Vietnam. The specimens were sifted from leaf litter and the roots of herbs beneath bushes and small trees at the margin of a pasture at an altitude of 1810 m (Fig. 24).

Acknowledgements

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Zusammenfassung

Drei Arten der Gattung *Neosclerus* CAMERON, 1924 werden beschrieben und abgebildet: *N. anguliceps* nov.sp. (Südindien), eine Art mit unklarer Gruppenzugehörigkeit, *N. concavus* nov.sp. (Thailand) aus der *N. brevispinosus*-Gruppe und *N. vietnamensis* (Vietnam) aus der *N. brevispinosus*-Gruppe, der zweite Nachweis der Gattung aus Vietnam. Damit enthält die Gattung derzeit 47 Arten in der südlichen Ostpaläarktis und der Orientalis.

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